



An Inaugural Dissertation

On

Tetanus.

Submitted to the examination of

Provost;

The Trustees and Medical Professors,

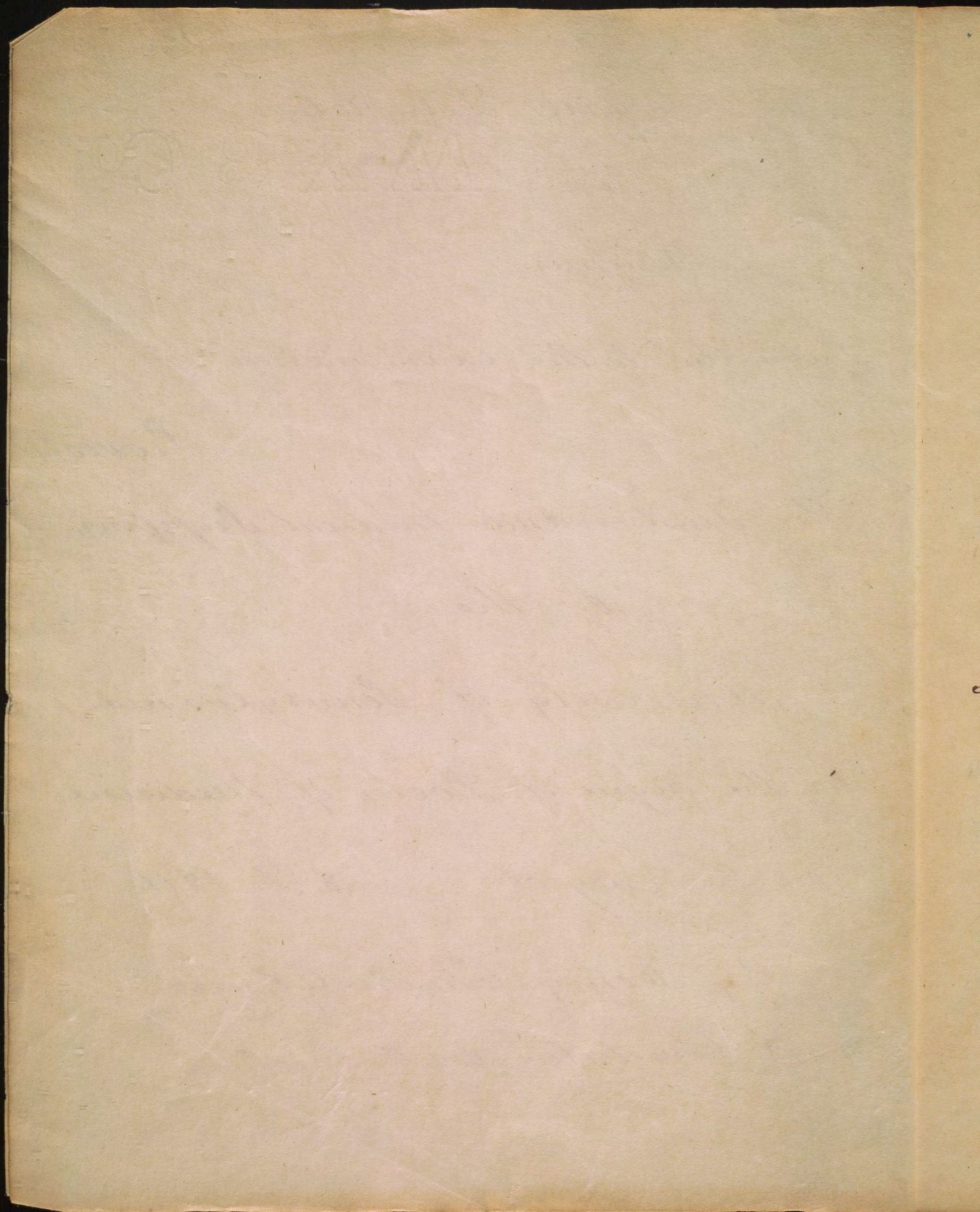
of the,

University of Pennsylvania.

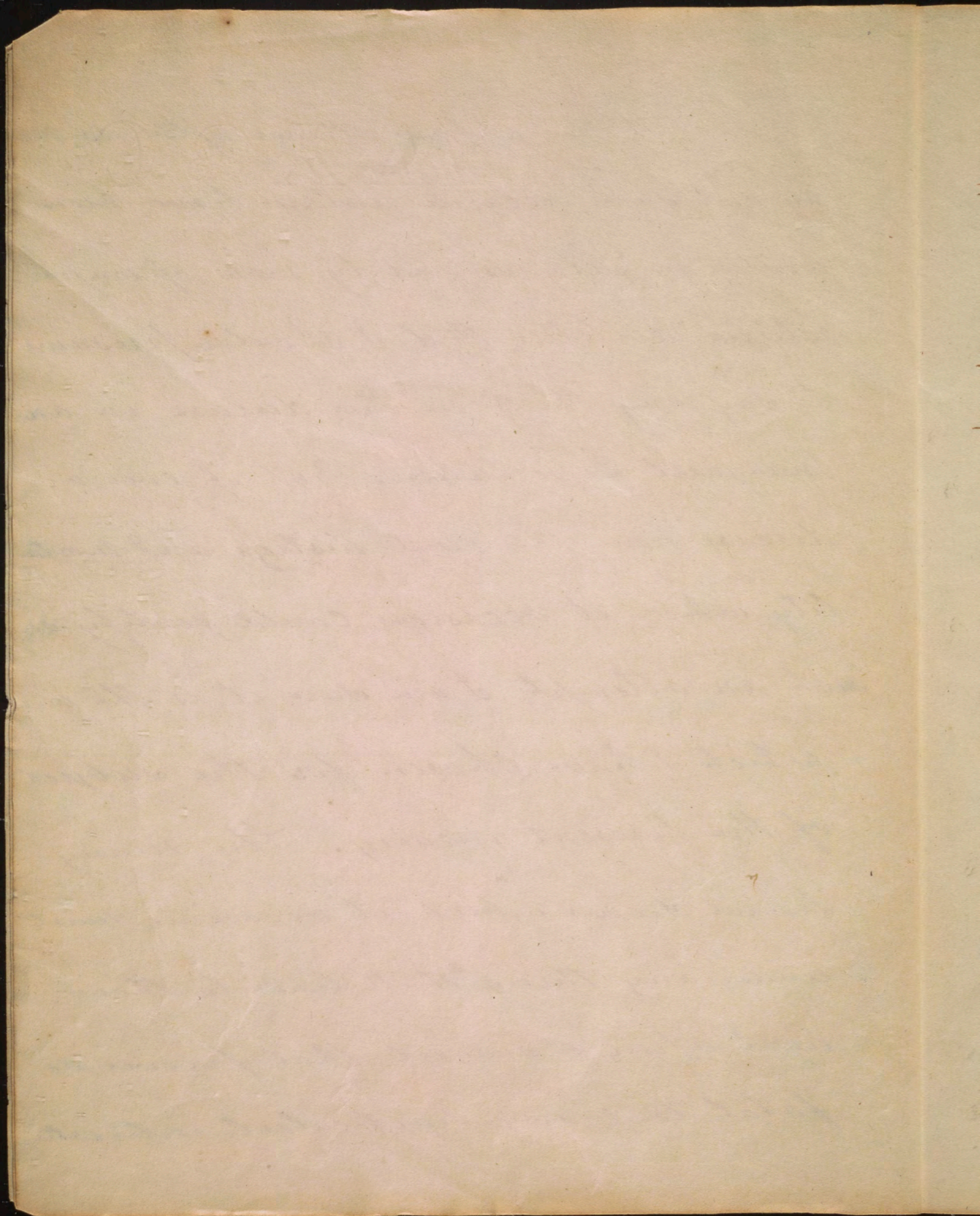
For the degree of Doctor of Medicine;

on the day of A. D. 1811.

By Henry Charles Glover;
of Charleston South Carolina.



It may appear strange after so many and such accurate histories have been written on Tetanus, and by men of unparalleled abilities, that I should presume to say any thing on this disease in an Inaugural Dissertation. But if ever a disease from the great distress and mortality which it occasions, could justify ~~the~~ such an attempt, I am sure it is the one which I have chosen for the subject of the present inquiry. The many horrid scenes which it occasions, must render any thing that tends to throw light upon a subject, that proves so fatal to many, particularly interesting.



It may be necessary to premise that I do not intend entering into the various controversies and disputes which have so frequently existed, whether the several divisions of Tetanus were distinct species, or only different grades of the same disease; but merely give my opinion in a brief manner.

The diversity of opinions, which has long since prevailed among learned and experienced Physicians concerning diseases; cannot but make the ascent of science, much more arduous to the inexperienced student, who is often prejudiced in favour of a theory, because he respects the author of it.

Tetanus is a disease of great and morbid muscular action, which is prevalent in warm climates, particularly in the summer seasons, when a warm day

of a large number of persons who
had been engaged in the
business of the country and who
were now returning to their
homes. The number of persons
who were engaged in the
business of the country was
very large and the number
who were returning to their
homes was also very large.
The number of persons who
were engaged in the business
of the country was very large
and the number who were
returning to their homes was
also very large. The number
of persons who were engaged
in the business of the country
was very large and the number
who were returning to their
homes was also very large.

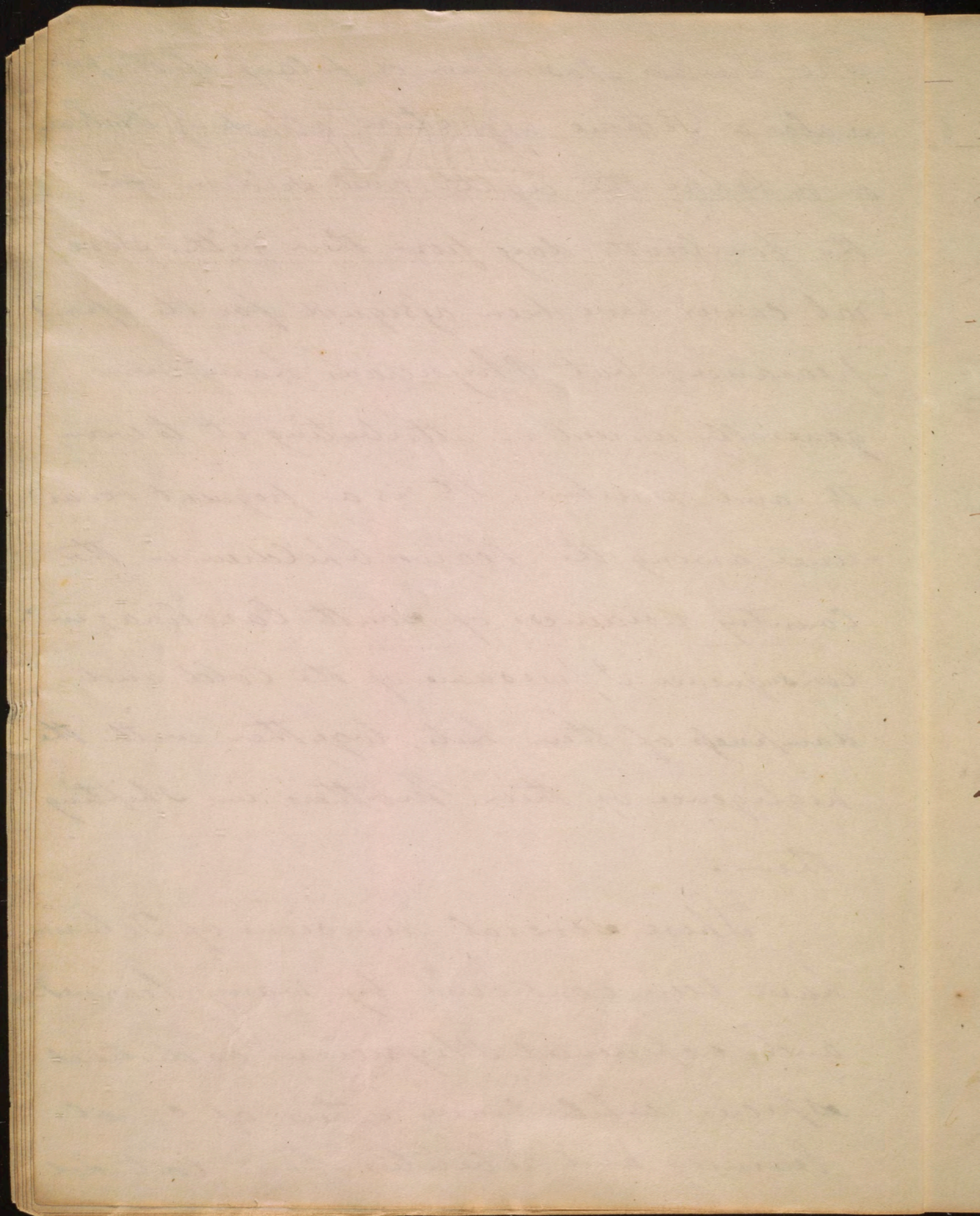
is succeeded by a damp Night, in consequence of either rain or dew. Dr. Cullen arranges it as a genus of disease, in the Class Neurosis and order Spasmi. It has been divided by the most learned of the ancients as well as Moderns, into two kinds; the one consisting of a continued morbid and involuntary contraction of the muscular fibres, or muscles, of the whole or any particular part of the body; and is from thence called Tonic Spasm. The other known by an alternate relaxation and contraction of the muscles, also without the concurrence of the will, or the repetition of the cause which induced it, and is called Clonic Spasm, or convulsions.

Besides this division of the disease it has been given different names according to the different parts of the body which are affected with it. When the muscles

of the Neck, Body, arms and Legs, are so rigidly contracted as to be kept straight and inflexible, together with so violent a contraction of the muscles of the Lower jaw, as to keep it locked; the Patient is ~~then~~ said to have a genuine Tetanus. When by a violent and morbid contraction of the muscles, the body is bent rigidly forward, it is called Emprosthotonos. When by a similar morbid contraction the body is rigidly bent backward, it then takes the name of Opisthotonos. When the body is rigidly held to one side Pleurosthotonos; and Trismus or Lock-jaw when the contractions of the muscles of the under-jaw are so morbid and violent, and the under-jaw is so rigidly drawn towards the upper that the mouth cannot be opened.

The Trismus Nasentium or falling of the jaw is also a Tetanic affection attacking Children on or before the Eighth, and seldom after the fourteenth day from their birth. Several causes have been assigned for its appearance; but Physicians have now generally agreed in attributing it to worm-
-th and moisture. It is a frequent occurrence among the Negro Children in the Country residences of South Carolina; in consequence I presume of the Cold and dampness of their huts, together with the negligence of their Mothers in shifting them.

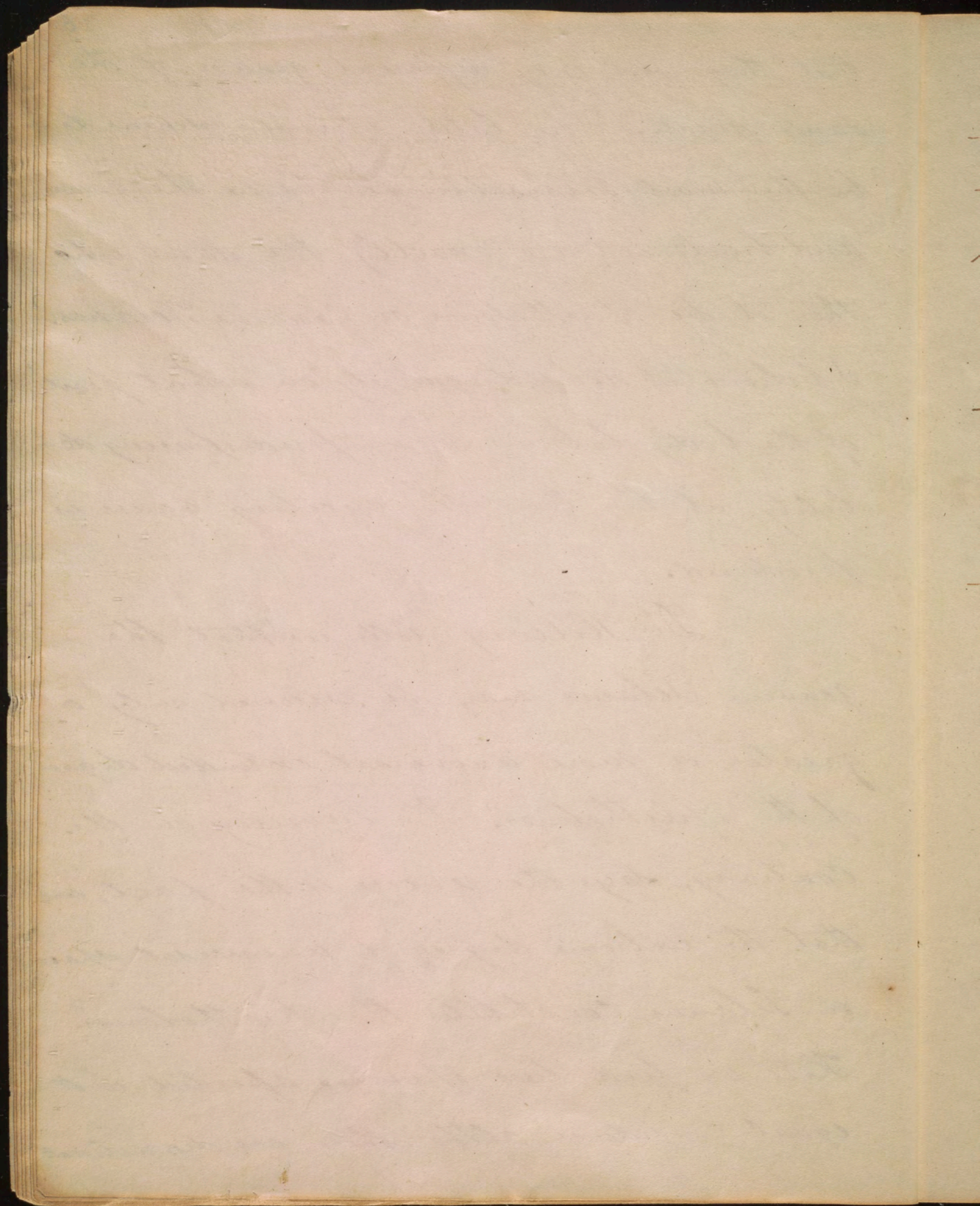
These several divisions of Tetanus have been considered by many learned and experienced Physicians as distinct species; while many others of equal learning and abilities have contended



that they were only different grades of the same disease. The latter opinion seems to be the most plausible, for both the cause and treatment are exactly the same whether it be opisthotonos, or Genuine Tetanus. I believe it depends entirely on what part of the body labours under predisposing debility, at the time the exciting cause is produced.

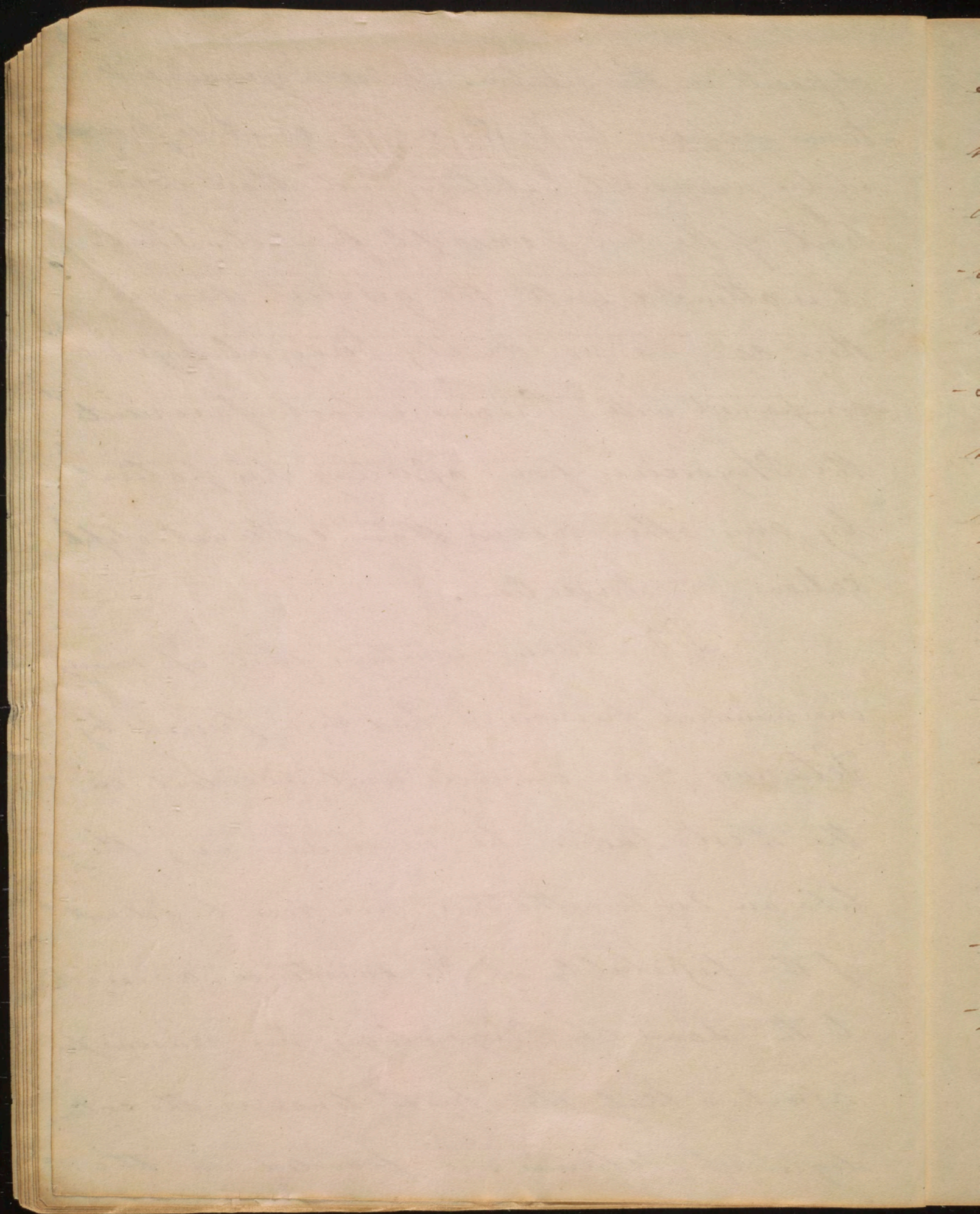
Dr. Hillary tells us "that the genuine Tetanus may be esteemed only a greater or more universal extended degree of the opisthotonos". Dr. Mosely on the contrary, says the reverse is the fact, and "that the extreme degree of universal spasm or Tetanus, constitutes the opisthotonos".

Here we find two opinions asserted with equal confidence, altho' they are diametrically



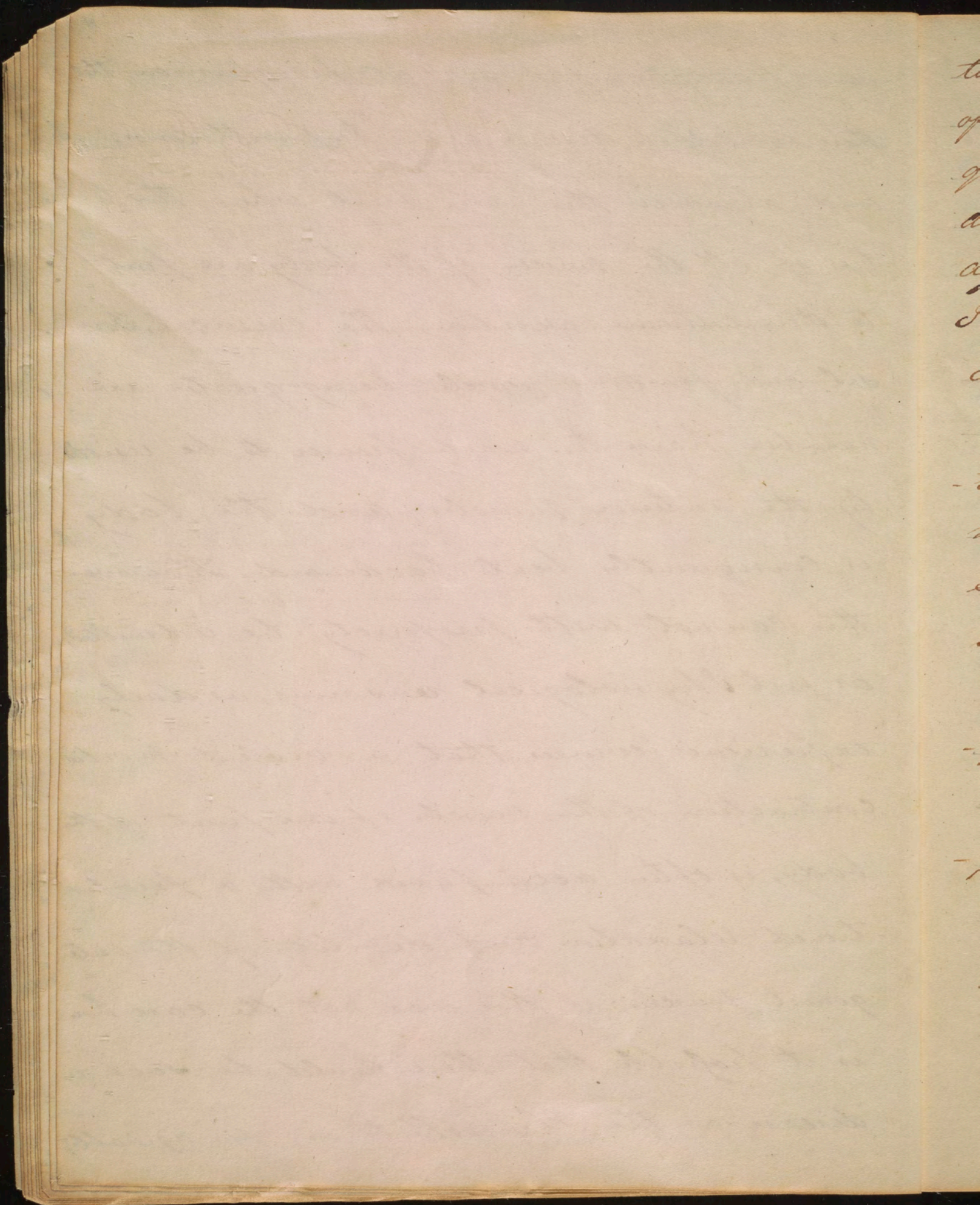
opposite in their Nature. To me a genuine Tetanus appears to be the worst, as it is preceded by universal debility, and there is no part of the body exempt from it. That it is attended with the greatest danger there can be no doubt; being always accompanied with Trismus which prevents the Physician from assisting his patient by any other means than external applications or Injections.

Dr. Moseley mentions, that of nearly one hundred persons he had seen perish by Tetanus; from wounds and accidents, in the West-Indies, he never saw any thing like an Emprosthotonos; nor does he admit of the possibility of its existence, agreeably to the Laws of Physiology; his reasons for asserting that the opisthotonos is the extreme degree of Tetanus, are founded on the



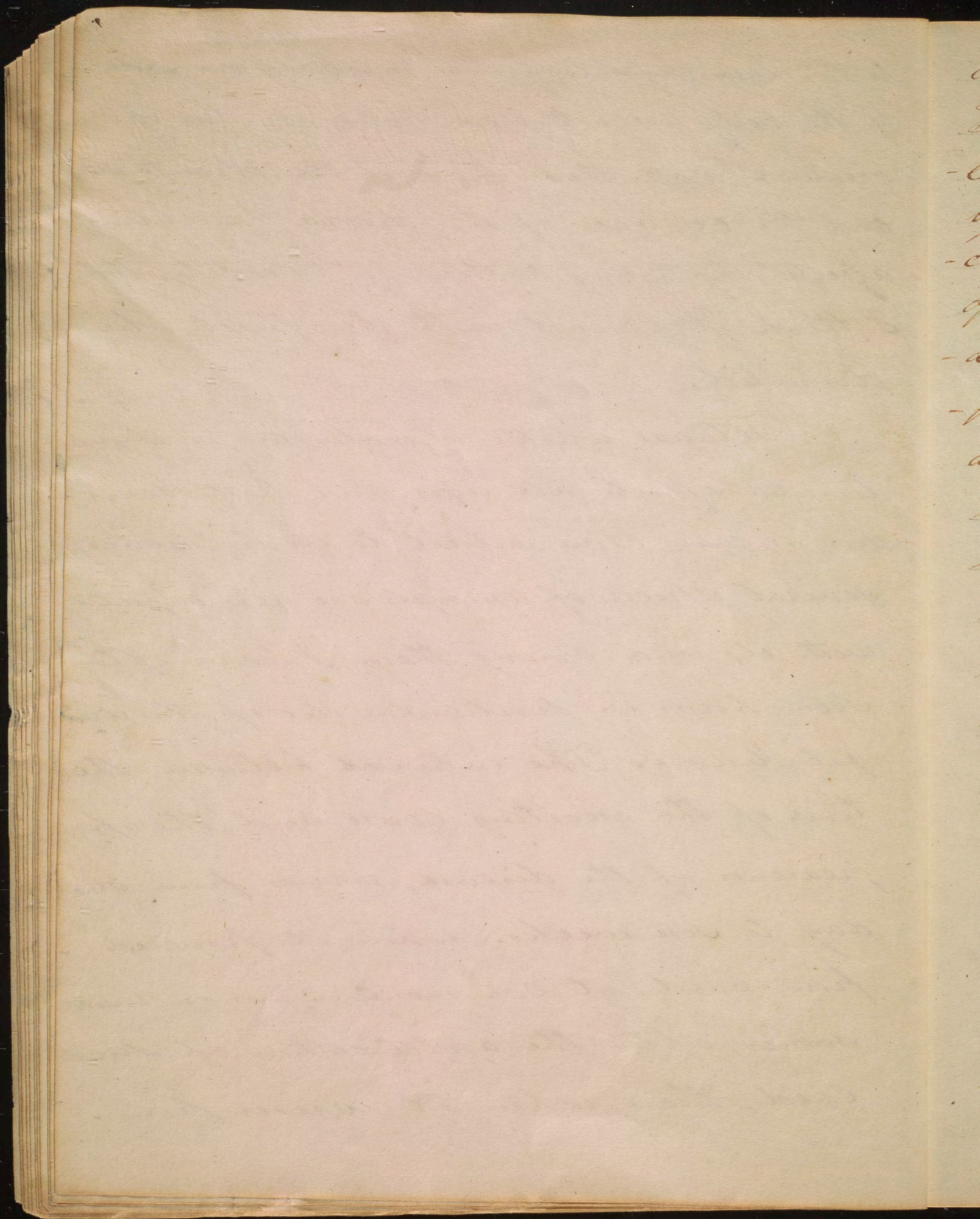
8

same principles which support his opinion, that there is no such disease as an Emprosthotonos; and argues in this way. That when the fibres of all the muscles of the body are put to their extreme exertion, the cervical, dorsal and posterior muscles being greater in number have too much power to be resisted by the anterior muscles; and the body is consequently bent backward. However this cannot with propriety be admitted, as just Physiological reasoning, as daily experience evinces, that a violent morbid contraction of the muscles of one part of the body, is often accompanied with a proportioned relaxation and debility of the antagonist muscles; if this was not the case how is it possible that there could be such a disease as the Pleurosthotonos; for aequably



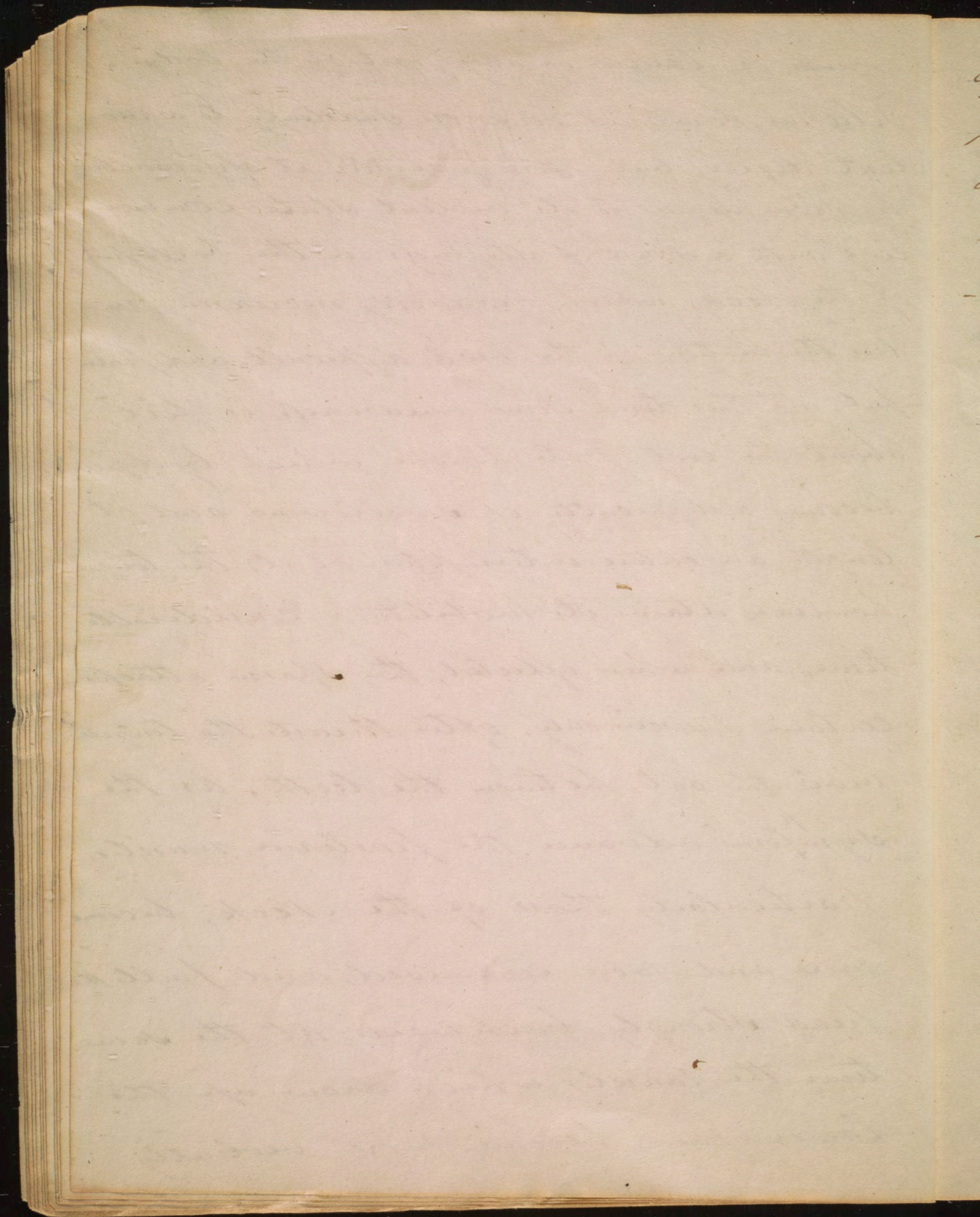
9
to the laws Physiology, the muscles of one side
of the body are not more numerous, nor of
greater strength than those of the opposite side,
and the existence of the disease has been
asserted by many authors of veracity, that
I think it cannot with propriety be
disputed.

Tetanus whether Idiopathic or Symp-
-tomatic affects all ages and both sexes,
nor is man alone subject to its influence;
several species of animals are also affected
with it; and among them I have often
seen horses in particular die of this dread-
-ful disease. The interval between the
time of the exciting cause, and the ap-
-pearance of the disease, varies from one
day to six weeks. when it proceeds
from cold, it commonly comes on much
sooner, after the application of such
cold, than when it arises from

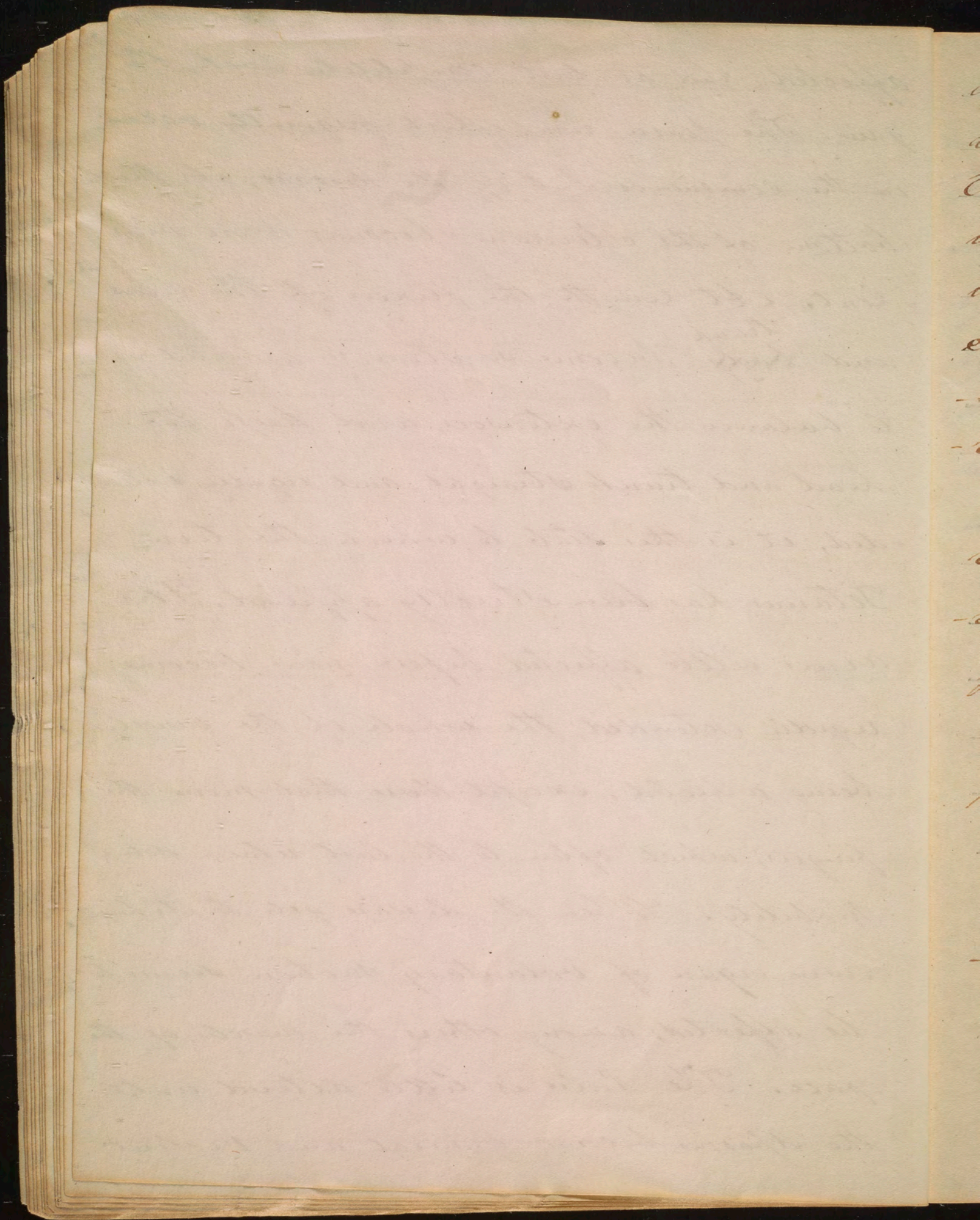


wounds or Lesions of any part of the body.

Tetanus sometimes comes on suddenly to a violent degree; but more generally it approaches by slow degrees to its violent state; commencing with a sense of stiffness in the back part of the Neck, which gradually increasing, renders the motion of the head difficult and painful; at this time some uneasiness is felt about the root of the tongue, which by degrees becomes a difficulty of swallowing, and at length an entire interruption of it; the tongue however retains its mobility a considerable time; and when affected, the spasm attacks certain muscles only, often thrusts the tongue violently out between the teeth. as the ^{symptoms} advance the posterior muscles, particularly those of the Neck, become more and more convulsed, and pull the head strongly backward; at the same time the muscles which draw up the lower-jaw, become more violently



affected, and at last completely lock the jaw. The pain now, which frequently occurs in the commencement of the disease, at the bottom of the sternum, becomes more violent. At length the flexors of the head and ~~body~~^{trunk} become so strongly affected as to balance the extensors, and keep the head and trunk straight, and rigidly extended; it is this state to which the term Tetanus has been strictly applied. The arms little affected before now become rigidly extended; the whole of the muscles being affected, except those that move the fingers, which often to the last retain some mobility. When the disease gets to its height, every organ of voluntary motion seems to be affected; among others the muscles of the face. The Pulse is little altered until the Spasms become general and violent;



it is then contracted, hurried, and irregular; and the respiration is affected in like manner. Every case that has come under my notice, was attended with cold extremities, together with a cold sweat over the body. Fever seldom occurs in this disease; though Dr. Cal-
-len says when caused by Cold, it has super-
-vened.

Patients labouring under Clonic spasms require particular attention, for after a tempo-
-rary remission the succeeding contraction is frequently so severe that the patient is often convulsed. Dr. Moseley tells us on visiting people affected with it, he has often found them out of bed, when neglected by their attendants; and mentions cases ^{of} ~~where~~ pati-
-ents being suddenly seized with a violent contraction of the muscles, jerking out of bed, which brought them to the ground by a severe fall. Our author highly recom-
-mends

[Faint, illegible handwriting across the page, likely bleed-through from the reverse side.]

[Faint, illegible handwriting on the right margin, likely bleed-through from the reverse side.]

guarding against such accidents, as they often terminate the Patient's existence.

The Remote Cause, by which we are to understand any thing which will induce debility; by the exciting cause, any stimulus which by acting on that debility will tend to induce disease. The most frequent of these, are, wounds, contusions, burns, bruises, fractures, dislocations, surgical operations, parturition, and obstructed perspiration; it is also induced by sudden transitions from heat to cold. Dr. Rush in his Lectures mentions cases in which it was brought on by persons striking their toes against a stone, or cutting a nail or corn too close. He also mentions an important fact, which deserves our serious attention; that he never knew a case of Tetanus proceed from a wound in which there was Inflammation.

The Predisposing cause of ~~the~~ diseases

[Faint, illegible handwriting across the page, likely bleed-through from the reverse side.]

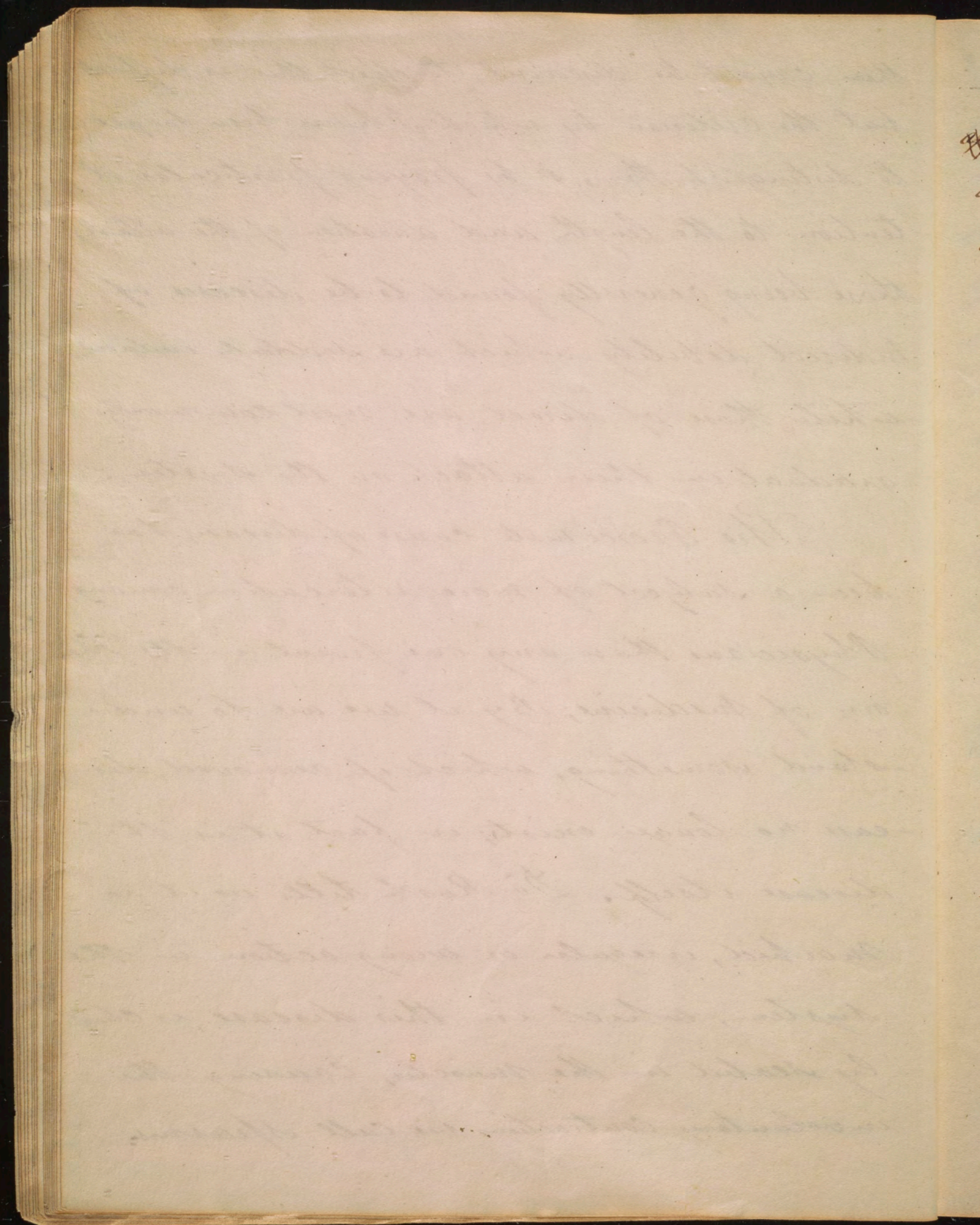
[Partial view of the adjacent page on the right, showing faint handwriting.]

14
has of late been a subject of little altercation
-on among Physicians, as they have generally at-
-tributed it, in this, as well ~~as~~ ~~as~~ ~~as~~ ~~as~~ as all other
diseases to debility. I cannot conceive the pos-
-sibility of a disease, according to the present
improved Theory of Medicine, without pre-
-disposing debility. This debility is of two
kinds, the one produced in consequence of
an abstraction of some of the natural sti-
-muli from the system; the other from an
excess of stimuli; or in other words the one
is debility from action, the other debility
from abstraction. Diseases of Direct and
Indirect debility require a variation in the
force of the remedies made use of for
their cure; it is therefore requisite that
the judgment of the Practitioner should
be exerted in distinguishing the one from
the other, when the causes which induce the

the
be
to
-ter
the
me
we
g
n
o
-o
re
-e
o
r
-

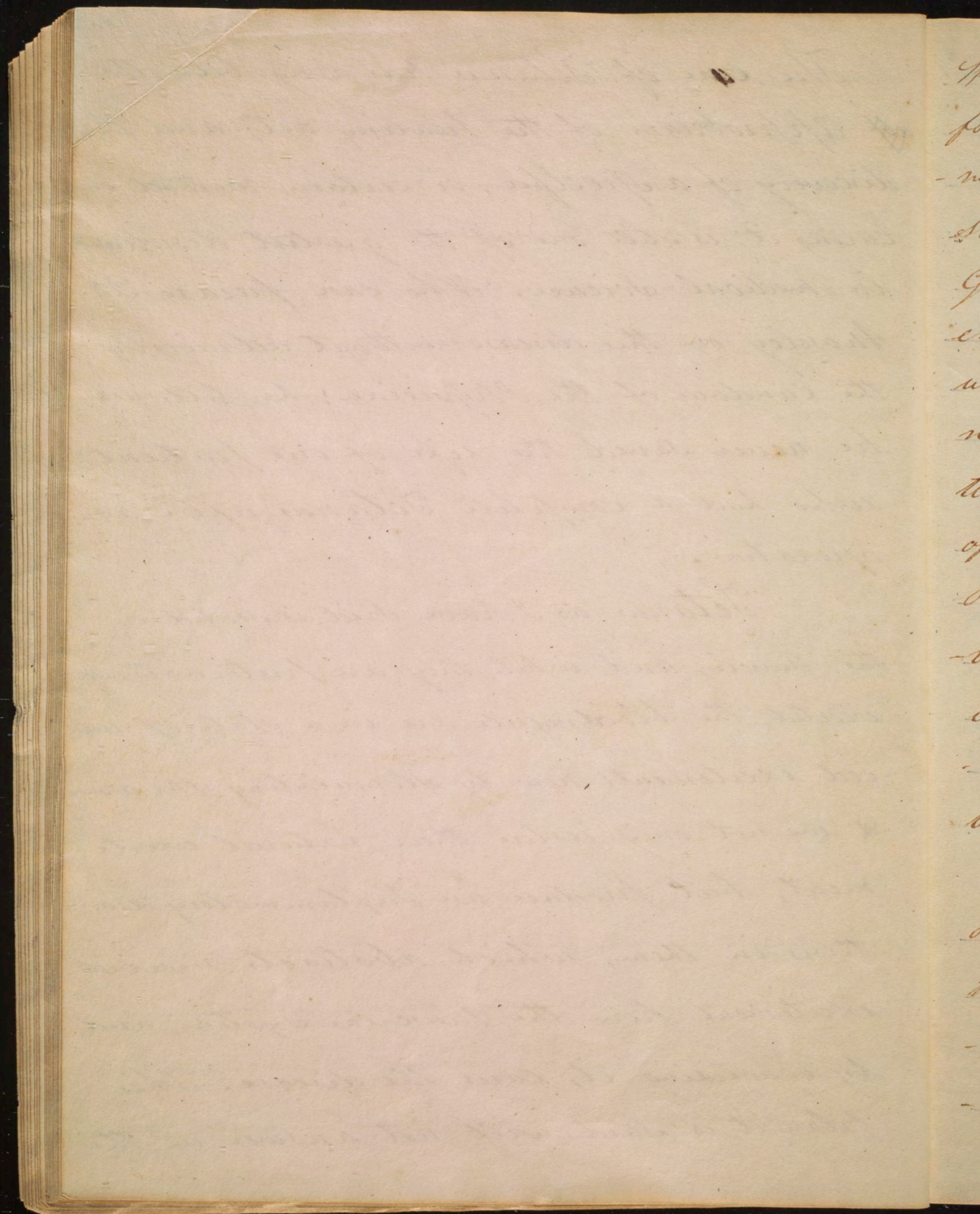
them cannot be discovered, to effect this is difficult, but the criterion by which I have been taught to distinguish them, is by paying particular attention to the length and duration of the attack; those being generally found to be diseases of indirect debility which are suddenly induced, while those of direct, are most commonly gradual in their attack on the system.

The Proximate cause of disease, has been a subject of more altercation among Physicians than any one point in the Theory of medicine; By it we are to understand something, which if removed, disease no longer exists; in fact it is the disease itself. Dr Rush tells us it is morbid, irregular or wrong action in the system; which in this disease is chiefly seated in the muscles, causing the involuntary contractions we call Spasms.



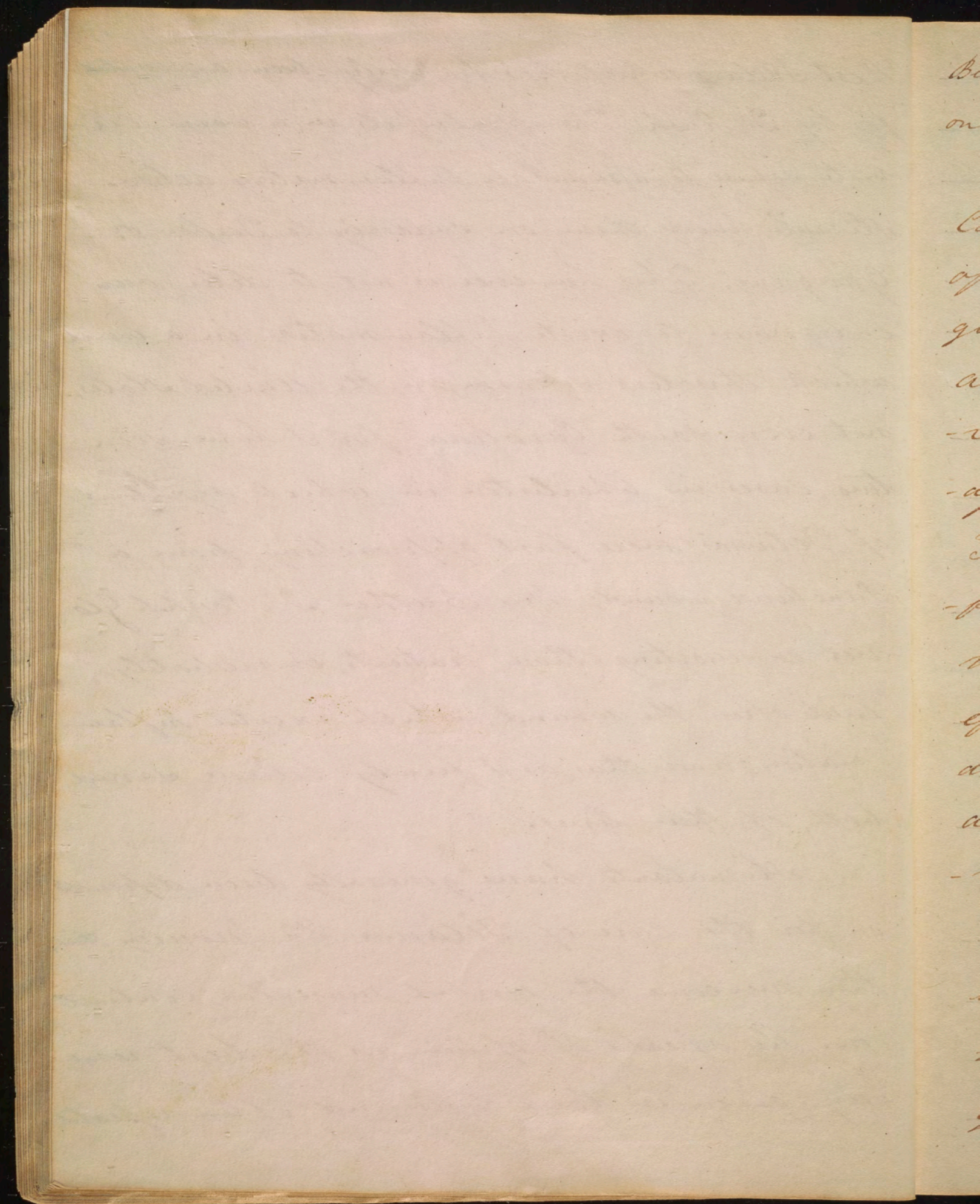
The ~~cure~~ of Tetanus has long been the ~~ap~~probrium of the healing art; and the discovery of a specific, or certain method of curing it, is still one of the greatest desiderata in medical science. Who can peruse Dr Moseley on this disease without admiring the Candour of the Physician; he tells us he never saved the life of one patient who had a complete Tetanus after an operation.

Tetanus as I have said is seated in the muscles, and while they are preternaturally excited, the bloodvessels are in a state of reduced excitement! now by stimulating the wound ~~we~~ we not only restore their natural excitement, but produce an Inflammatory diathesis in them, which abstracts morbid excitement from the Muscular system, and, by equalising it, cures the disease. This plan it is said will not answer in the



West-Indies; which has happily been accounted for by Dr. Rush! "The bloodvessels in a warm climate refuse to assume an Inflammatory action. Stimuli hurry them on suddenly to Torpor or Gangrene". This however is not to deter our endeavours to excite Inflammation in a wound which threatens spasm, in the United States, not even South Carolina; for I have seen two cases in Charleston in which symptoms of Tetanus were fast approaching, from a Punctured wound; My Brother Dr. Joseph Glover on visiting those patients, immediately laid open the wound, which excited Inflammation; and thus as I firmly believe saved both of their lives.

Stimulants have generally been depended on for the cure of Tetanus; Dr. Monro thinks they overcome the morbid muscular contraction. He speaks of opium as the best remedy, given in large doses and often repeated.



But our whole dependance should not be placed on this medicine.

Paul Hamilton Esquire of Colleton South Carolina, now Secretary of our Navy; has often cured Tetanus among his Negroes, by giving large quantities of Ardent spirits. and I have seen a horse once completely cured of violent Spasm by the same remedy.

The oil of Amber has been highly useful in this disease; Dr. Rush in his Inquiries mentions his having "seen the happiest effects from the exhibition of six or eight drops of it, every two hours;" and thinks it acts powerfully upon the muscular system.

Bark and wine have of late been used with great success, particularly by Dr. Rush. the wine should be given in very large quantities. This Practice has been strongly

[Faint, illegible handwriting across the page, likely bleed-through from the reverse side.]

[Faint, illegible handwriting on the right edge of the page, likely bleed-through from the reverse side.]

advocated by Dr. Hosack of New-York, whose experience appears likewise to sanction its utility.

When unfortunately for the patient there is so great a contraction of the muscles of the Lower jaw and Pharynx, that nothing can be taken by the mouth, it would be advisable that Nutritive Injections, with the addition of a few drops of Liquid Laudanum should be administered frequently through the course of the day; that such patients may be kept alive by its nourishment, while the stimulus of the Laudanum might tend to conquer the disease. Applications of opium and camphor to the feet, or Injections of the smoke of Nicotiana, should be tried, and frequently repeated until the symptoms abate.

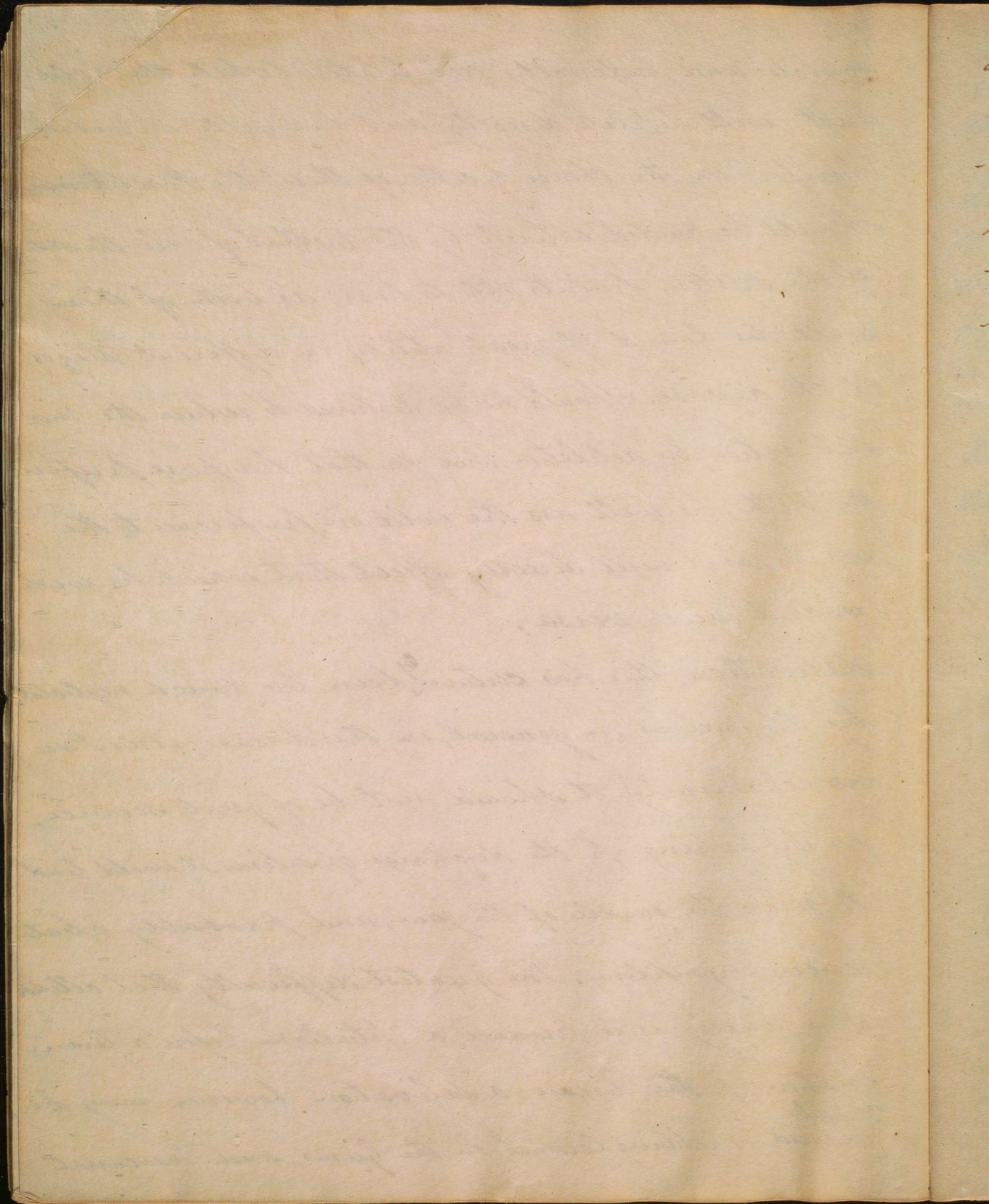
Both the cold and warm Baths have likewise had their advocates in this disease. They both operate either directly or indirectly in a different manner. The warm bath will directly sti-

[Faint, illegible handwriting across the page]

[Faint, illegible handwriting on the right margin]

malate and indirectly debilitate. While the Cold bath will deplete directly, and indirectly stimulate. Therefore in the choice of either of them the Practitioner should be guided entirely by the method of cure the state of the system points out to him; as both of them will be found of great utility in different stages of the disease. Should he be disposed to reduce the morbid action, by depletion, and for that purpose prefers the bath, he will use the cold in preference to the warm; as it will directly affect that which he wishes. and vice versa.

Salivation, this has certainly ^{by} been too much neglected by Physicians in general, in this disease; And I see no reasons why it should not be of great service, for by keeping up the discharge of saliva, it would tend to relax the muscles of the jaw, and probably abate every symptom. The greatest difficulty that attends this remedy, is to produce a ptyalism before a termination of the disease; a salivation however may be ^{speedily} induced by rubbing Calomel on the Gums, and Mercarial



ointment in the axilla.

Dr Brooks in his practice, when treating of the Opisthotonos and Tetanus of North America, tells us that the face is sometimes pale, but oftener flushed. These observations I conceive to be of great consequence in determining on a certain method of cure, as Nature cannot more directly point out to us the utility of the Sanguet, than by subjecting to our view a Clinical patient, with a face turgid with blood. In every case which I have seen bloodletting used in Tetanus, it produced a temporary remission; but I am sorry to add, the succeeding contraction was always more violent. I must however confess that I have never seen it carried to any great extent.

Having now Gentlemen given in a short and best manner my time and talents would permit; such methods of treating Tetanus, as I have seen pursued by different Physicians. You will readily perceive I have omitted mentioning many remedies; not however because I was ignorant of their being used in this disease.

the
to
the
se
pe
in
Th
h
th
p

but as I have never seen a trial made of them;
it would be superfluous to make mention of them in
this place.

In thus taking my leave of you, permit me
to express my sincerest wishes, that you may enjoy,
through the remainder of your lives an uninterrupted
scene of health and happiness. To all of you I
find myself essentially indebted, for the invaluable
instruction I have received from your lectures.
The pointed attention with which I have been
honoured by some of you, will ever awaken
the grateful sensibility I feel, for the kindness
I have received.

Finis.

V.2
7401
F13
Rush papers